

incompatible with the A block,

B1 - the C block is incompatible with the thermoplastic resin or resins X1 to Xn, the A block and the B block,

wherein if the semi-crystalline thermoplastic resins comprise polystyrene, then the block copolymer is a poly(styrene)-poly(butadiene)-poly(methylmethacrylate) triblock copolymer.

5. A composition according to Claim 1, wherein the C block has a glass transition temperature Tg(C) or a melting temperature M.t.(C) which is greater than the glass transition temperature Tg(B) of the B block.

B2 6. A composition according to Claim 1, wherein the block copolymer with at least three A, B and C blocks comprises, as side products of its synthesis, a B-C diblock copolymer and optionally C homopolymer.

7. A composition according to Claim 1, wherein the block copolymer with at least three A, B and C blocks comprises, as side products of its synthesis, an A-B diblock copolymer and optionally A homopolymer.

8. A composition according to Claim 1, wherein the B block is chosen from the group consisting of poly(dienes) which are partially or completely hydrogenated.

11. A composition according to Claim 1, comprising:

- from 25 to 95% by weight of the thermoplastic resin or resins X1 to Xn, based on the total weight of thermoplastic resin(s) and the block copolymer, and

B3 - the remainder by weight, based on the total weight of thermoplastic resin(s) and the block copolymer, being the block copolymer comprising the three A, B and C blocks connected to one another, wherein the block copolymer comprises:

- 20 to 93 parts by weight of A sequences

- 5 to 68 parts by weight of B sequences

- 2 to 65 parts by weight of C sequences.

12. A composition according to Claim 1, comprising, by weight:

- at least 50% of poly(carbonate) PC based on the total weight of thermoplastic resin(s) and of the block copolymer, and

- the remainder of the total weight of thermoplastic resin(s) and of the block copolymer being PMMA-PB-PS triblock copolymer.

13. A composition according to Claim 1, comprising:

- at least 50% of poly(carbonate) PC based on the total weight of thermoplastic resin(s) and of the block copolymer, and

- the remainder of the total weight of thermoplastic resin(s) and of the block copolymer being poly(cyclohexyl methacrylate)-PB-PS triblock copolymer.

14. A composition according to Claim 1, comprising, by weight:

- at least 50% of poly(butylene terephthalate) PBT based on the total weight of thermoplastic resin(s) and of the block copolymer, and

- the remainder of the total weight of thermoplastic resin(s) and of the block copolymer being PMMA-PB-PS triblock copolymer.

15. A composition according to Claim 1, comprising, by weight:

- at least 50% of poly(oxyethylene) POE based on the total weight of thermoplastic resin(s) and of the block copolymer, and

- the remainder of the total weight of thermoplastic resin(s) and of the block copolymer being PMMA-PB-PS triblock copolymer.

16. A composition according to Claim 1, comprising, by weight:

- at least 50% of poly(propylene) PP based on the total weight of thermoplastic resin(s) and of the block copolymer, and

- the remainder of the total weight of thermoplastic resin(s) and of the block copolymer being poly(nonyl methacrylate)-PB-PS triblock copolymer.

17. A composition according to Claim 1, comprising, by weight:

- at least 50% of poly(amide) PA %, based on the total weight of poly(amide) and the block copolymer, and

- the remainder of the total weight of poly(amide) and the block copolymer being at least one poly(caprolactone)-PB-PS triblock copolymer.

18. A composition according to Claim 1, comprising, by weight, at least 50%, based on the total weight of fluorinated resin(s) and the block copolymer, and the remainder of the total weight of fluorinated resin(s) and the block copolymer being at least one block copolymer with a number-average molecular mass (Mn) of greater than or equal to 20,000 g.mol⁻¹ composed of:

- 20 to 93 parts by weight of A sequences,

- 5 to 50 parts by weight of B sequences,

- 2 to 50 parts by weight of C sequences.

19. A composition according to Claim 18, wherein said thermoplastic fluorinated resin(s) comprises poly(vinylidene difluoride) (PVDF) and said block copolymer is a poly(methyl methacrylate)-poly(butadiene)-poly(styrene) triblock copolymer.

20. A composition according to Claim 1, comprising, by weight, at least 50% of semi-crystalline thermoplastic vinyl resin(s) based on the total weight of vinyl resin(s) and the block copolymer, and the remainder of the total weight of vinyl resin(s) and the block copolymer being at least one block copolymer with an Mn of greater than or equal to 20,000 g.mol⁻¹ composed of:

- 20 to 93 parts by weight of A sequences,
- 5 to 68 parts by weight of B sequences,
- 2 to 50 parts by weight of C sequences.

21. A composition according to Claim 20, wherein said semi-crystalline thermoplastic vinyl resin(s) comprises poly(vinyl chloride) (PVC) and said block copolymer is a poly(methyl methacrylate)-poly(butadiene)-poly(styrene) triblock copolymer.

22. A composition according to Claim 20, wherein said semi-crystalline thermoplastic vinyl resin(s) comprises chlorinated poly(vinyl chloride) (CPVC) and said block copolymer is a poly(methyl methacrylate)-poly(butadiene)-poly(styrene) triblock copolymer.

25. A composition according to Claim 1, further comprising one or more thermoplastic polymer(s) D which is compatible with the C sequences, wherein said one or more thermoplastic polymer(s) D is present in an amount of less than 10% of the total mass of thermoplastic resin(s) X1 to Xn and of the block copolymer(s) and, optionally, side products of the block copolymer.

26. A process for the preparation of a material or of an item from the composition according to claim 1, comprising:

- mixing in a molten state the thermoplastic resin(s) X1 to Xn with the block copolymer(s) and, optionally, at least one thermoplastic polymer(s) D, and optionally in the presence of additives and/or of fillers which can remain in a solid state,
- cooling the thus obtained liquid or the molten material to obtain a material or an item in the solid state.

27. A material or item having a composition according to Claim 1, wherein said material or item has the following heterogeneous structure:

- a continuous phase comprising said thermoplastic resin or resins X1 to Xn, and a non-continuous phase dispersed in as nodules with a size Dn of less than 0.5 micrometer,

- each nodule comprising an internal region comprising C blocks of the ABC block copolymer(s) and an external peripheral region comprising B blocks of the ABC block copolymer(s), this peripheral region surrounding the internal region in a continuous or discontinuous fashion.

28. A material or item according to Claim 27, wherein the ABC block copolymer comprises, as side products of its synthesis, a B-C diblock copolymer and, optionally, C homopolymer and wherein in the internal region of the nodules surrounds one or more domains comprising B blocks of the B-C diblock.

29. A material or item according to Claim 27, wherein the nodules have a size Dn ranging from 30 to 350 nanometers.

30. A material or item according to Claim 27, wherein the nodules have a size Dn ranging from 60 to 250 nanometers.

31. A material or item according to Claim 27, wherein the distance between two neighbouring nodules Di is between 1.1 and 5 times the value of the size of the nodules Dn.--

Please add the following new claims:

--32. A composition according to Claim 2, wherein the C block has a glass transition temperature Tg(C) or a melting temperature M.t.(C) which is greater than the glass transition temperature Tg(B) of the B block.

33. A composition according to Claim 8, wherein the B block is chosen from the group consisting of poly(butadiene), poly(isoprene) and their statistical copolymers, which are optionally partially or completely hydrogenated.

34. A composition according to Claim 11, comprising from 50 to 95% by weight of the thermoplastic resin or resins X1 to Xn, based on the total weight of thermoplastic resin(s) and the block copolymer.

35. A composition according to Claim 11, comprising from 65 to 95% by weight of the thermoplastic resin or resins X1 to Xn, based on the total weight of thermoplastic resin(s) and the block copolymer.

36. A composition according to Claim 12, comprising, by weight, from 65 to 95% of poly(carbonate) PC based on the total weight of thermoplastic resin(s) and of the block

copolymer, and the remainder of the total weight of thermoplastic resin(s) and of the block copolymer being at least one PMMA-PB-PS triblock copolymer.

37. A composition according to Claim 13, comprising, by weight, from 65 to 95% of poly(carbonate) PC based on the total weight of thermoplastic resin(s) and of the block copolymer, and the remainder of the total weight of thermoplastic resin(s) and of the block copolymer being at least one poly(cyclohexyl methacrylate)-PB-PS triblock copolymer.

38. A composition according to Claim 14, comprising, by weight, from 65 to 95% of poly(butylene terephthalate) PBT based on the total weight of thermoplastic resin(s) and of the block copolymer, and the remainder of the total weight of thermoplastic resin(s) and of the block copolymer being at least one PMMA-PB-PS triblock copolymer.

39. A composition according to Claim 15, comprising, by weight, from 65 to 95% of poly(oxyethylene) POE based on the total weight of thermoplastic resin(s) and of the block copolymer, and the remainder of the total weight of thermoplastic resin(s) and of the block copolymer being at least one PMMA-PB-PS triblock copolymer.

40. A composition according to Claim 16, comprising, by weight, from 65 to 95% of poly(propylene) PP based on the total weight of thermoplastic resin(s) and of the block copolymer, and the remainder of the total weight of thermoplastic resin(s) and of the block copolymer being at least one poly(nonyl methacrylate)-PB-PS triblock copolymer.

41. A composition according to Claim 17, comprising, by weight, from 65 to 95% of poly(amide) PA %, based on the total weight of poly(amide) and the block copolymer, and the remainder of the total weight of poly(amide) and the block copolymer being at least one of the poly(caprolactone)-PB-PS triblock copolymer,

42. A composition according to Claim 18, comprising, by weight, from 65 to 95% of semi-crystalline thermoplastic fluorinated resin(s) and the remainder of the total weight of fluorinated resin(s) and the block copolymer being at least one block copolymer with a number-average molecular mass (Mn) of between 50,000 and 200,000 g.mol⁻¹, composed of:

- 30 to 60 parts by weight of A sequences,
- 10 to 40 parts by weight of B sequences,
- 5 to 40 parts by weight of C sequences.

43. A composition according to Claim 42, wherein said thermoplastic fluorinated resin(s) comprises poly(vinylidene difluoride) (PVDF) as said thermoplastic fluorinated resin and said block copolymer is a poly(methyl methacrylate)-poly(butadiene)-poly(styrene)

triblock copolymer.

44. A composition according to Claim 20, comprising, by weight, from 65 to 95% of semi-crystalline thermoplastic vinyl resin(s) based on the total weight of vinyl resin(s) and the block copolymer, and the remainder of the total weight of vinyl resin(s) and the block copolymer being at least one block copolymer with an Mn of between 50,000 and 200,000 g.mol⁻¹, composed of:

- 30 to 60 parts by weight of A sequences,
- 11 to 55 parts by weight of B sequences,
- 5 to 49 parts by weight of C sequences.

45. A composition according to Claim 44, wherein said semi-crystalline thermoplastic vinyl resin(s) comprises poly(vinyl chloride) (PVC) and said block copolymer is a poly(methyl methacrylate)-poly(butadiene)-poly(styrene) triblock copolymer.

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46. A composition according to Claim 44, wherein said semi-crystalline thermoplastic vinyl resin(s) comprises chlorinated poly(vinyl chloride) (CPVC) and said block copolymer is a poly(methyl methacrylate)-poly(butadiene)-poly(styrene) triblock copolymer.

47. A composition comprising:

- a semi-crystalline thermoplastic resin X1 or several compatible thermoplastic resins X1 to Xn, wherein at least one of X1 to Xn is semi-crystalline, and
- at least one block (sequential) copolymer,
- n being an integer equal to or greater than 1,

wherein the block copolymer comprises at least three blocks A, B and C in which each block is either a homopolymer or a copolymer obtained from two or more monomers, the A block is connected to the B block and the B block to is connected to the C block by means of a covalent bond or of an intermediate molecule connected to one of these blocks via a covalent bond and to another block via another covalent bond, and

- the A block is compatible with the thermoplastic resin or resins X1 to Xn,
- the B block is incompatible with the thermoplastic resin or resins X1 to Xn and incompatible with the A block,
- the C block is incompatible with the thermoplastic resin or resins X1 to Xn, the A block and the B block, and

wherein said composition comprises, by weight, at least 50% of semi-crystalline

styrene thermoplastic resin(s) based on the total weight of styrene thermoplastic resin(s) and the block copolymer, and the remainder of the total weight of styrene thermoplastic resin(s) and the block copolymer is at least one block copolymer with an Mn of between 50,000 and 200,000 g.mol⁻¹, composed of:

- 20 to 93 parts by weight of A sequences,
- 5 to 50 parts by weight of B sequences,
- 2 to 50 parts by weight of C sequences.

48. A composition according to Claim 47, wherein said semi-crystalline thermoplastic styrene resin(s) comprises poly(styrene) and said block copolymer is a poly(styrene)-poly(butadiene)-poly(methyl methacrylate) triblock copolymer.

49. A composition according to Claim 47, comprising, by weight, from 65 to 95% of semi-crystalline styrene thermoplastic resin(s) based on the total weight of styrene thermoplastic resin(s) and the block copolymer, and the remainder of the total weight of vinyl resin(s) and the block copolymer being at least one block copolymer composed of:

- 30 to 60 parts by weight of A sequences,
- 10 to 40 parts by weight of B sequences,
- 5 to 40 parts by weight of C sequences.

50. A composition according to Claim 49, wherein said semi-crystalline thermoplastic styrene resin(s) comprises poly(styrene) and said block copolymer is a poly(styrene)-poly(butadiene)-poly(methyl methacrylate) triblock copolymer.

51. A composition comprising:

- a semi-crystalline thermoplastic resin X1 or several compatible thermoplastic resins X1 to Xn, wherein at least one of X1 to Xn is semi-crystalline, and
- at least one block (sequential) copolymer,
- n being an integer equal to or greater than 1,

wherein:

- the block copolymer comprises at least three blocks A, B and C, wherein each block is either a homopolymer or a copolymer obtained from two or more monomers, the A block is connected to the B block and the B block to is connected to the C block by means of a covalent bond or of an intermediate molecule connected to one of these blocks via a covalent bond and to another block via another covalent bond,
- the A block is compatible with the thermoplastic resin or resins X1 to Xn,

- the B block is incompatible with the thermoplastic resin or resins X1 to Xn and incompatible with the A block,

- the C block is incompatible with the thermoplastic resin or resins X1 to Xn, the A block and the B block,

wherein the semi-crystalline thermoplastic resins do not comprise polystyrene.--
